

REMARKS

A petition for a one month extension of time has today been filed as a separate paper and a copy is attached hereto.

Newly added claims 19 and 20 find support in the teachings at page 14, lines 5-7 and page 21, lines 5 and 6 of applicants' original specification.

Responsive to the first paragraph at page 2 of the office action, the specification has been reviewed, errors have been noted and a corrected specification and abstract is submitted herewith as a "Substitute Specification and Abstract." The "Substitute Specification and Abstract" contains no new matter. In order that the examiner can satisfy himself in this regard, also submitted herewith is a marked-up copy of the original specification and abstract, from which the "Substitute Specification and Abstract" has been typed.

It is believed that the rejection of claims 1-15, 17 and 18 for indefiniteness is now moot in view of the present amendments. The examiner will note that in claim 8 and in other claims the terminology "conductive material" has been changed to read "electrically conductive material." It should be apparent to those skilled in the art from a reading of the first two full paragraphs at page 11 of the original specification that the "conductivity" to which applicants refer is electrical conductivity.

The rejection of claims 1-9, 15, 17 and 18 for anticipation by Imahashi et al is respectfully traversed. Imahashi et al teach incorporation of a “water-repellent binder” into each of catalyst layers 6 and 8 which respectively serve as a hydrogen (fuel) reactive layer and as an oxygen reactive layer. The structure of Imahashi et al differs from that recited by the claims here in that the diffusion layers 7 and 9 contain no water-repellent material and Imahashi et al nowhere suggests incorporation of a water-repellent material into either of gas diffusion layers 7 and 9. Stated differently, applicants’ reactive layers are arranged between the electrolyte layer and the gas diffusion layers which contain the water-repellent material. With regard to this distinction, the examiner’s attention is directed to the paragraphs at page 24, lines 12-30 of applicants’ original specification. There, applicants teach that if a water-repellent material were to be incorporated into the reactive layers, the result would be a reduction of the conductivity of those layers resulting in lower cell output, e.g., as in Imahashi et al.

In the fuel cell disclosed by Takeuchi et al, the water-repellent binder, as in Imahashi et al, is incorporated into the catalyst layers. See, for example, column 5, lines 35-58. Accordingly, the rejection of claims 1-7 and 17 for anticipation by Takeuchi et al is traversed for the same reasons the rejection over Imahashi et al is traversed above.


Finally, the rejection of claims 10-14 for obviousness over Imahashi et al is traversed. Firstly, the obviousness rejection is traversed based on the fact that Imahashi et al nowhere suggest incorporation of the water-repellent binder into the gas diffusion layers. Moreover, Imahashi et al do not suggest “coating both sides of the gas diffusion layer” as asserted by the

examiner. The water-repellent layer of Imahashi et al is the reactive catalyst layer and duplication of the catalyst layer as a coating on both sides of the gas diffusion layer would be redundant and represent a structure in no way suggested by the reference. Further, a general teaching of "water-repellency" does not lead to specific ranges for water contact angles as recited by claims 12-14.

It is further submitted that claim 3 and the claims dependent thereon, which define the diffusion layers as each formed of plural sublayers, recite subject matter further removed from anything suggested by either Imahashi et al or Takeuchi et al.

In conclusion, it is respectfully requested that the examiner reconsider the rejections of record with a view toward allowance of the claims as amended.

Respectfully submitted,


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